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Variant Coding

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Variant Coding

Model: E24, E28, E30, E32, E34, E36

Production: 3/87 - 12/95

OBJECTIVES

After completion of this module you will be able to:

- Understand the purpose of variant coding
- Identify control modules/systems that must be variant coded
- Interpret a variant code
- Locate a variant code
- Variant code a control module

Variant Coding

A Variant Code is another means by which market specific application data can be released/assigned to a control module, this process allows one base control module to be utilized for different market applications.

The variant code is a 4 digit hexadecimal (alpha-numeric) code that is entered into a control module as part of the coding process. By entering a valid code into the module a set of operational data (characteristic maps) specific to the code entered is assigned to the operating program of that control module. The operational data and code are semi rigidly assigned, meaning that if a new code is entered, a different set of data is assigned to the program.

Variant coding is only used on engine control modules. Engine control modules which utilize variant coding were first introduced into production vehicles as of 3/87 production with Motronic M1.1 (Engine Control Module ECM/DME). Refer to **TRI B120186** for more information.

Variant coding is only used on Engine Control Modules with version M1.X.

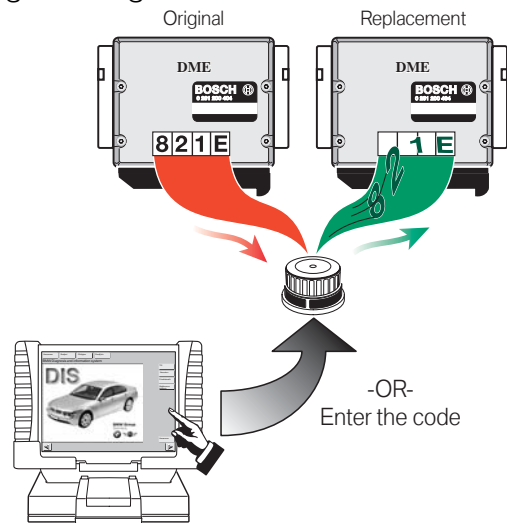
DME Version	Series	Cyl.	Engine	Year
M1.1	E28/E30	6	M20/M30	3/87 - 8/92
M1.2	E24/E28	6	S38	87 - 88
M1.3	E34	6	M20/M30	6/87 - 9/90
M1.3	E34	6	M30	6/88 - 12/92
M1.3	E32	6	M30	3/87 - 7/92
M1.7	E30/E36	4	M42	3/90 - 12/93
M1.7.2	E36	4	M42	1/94 - 12/95

Using the DISplus/GT1/SSS with the latest CIP programming software contained within Progan, allows the technician to:

- Code a new, uncoded control module.
- Recode a previously coded control module.

The variant code is entered into the control module either by:

- Adopting the existing code from the defective DME control module (if diagnostic communication is possible).
- Manually entering the variant code via the keypad displayed on the screen of the DISplus/GT1/SSS.



Note: M1.X DME control modules can only be coded up to eight (8) times. The GT1/DISplus will display the remaining number of times the control module can be recoded.

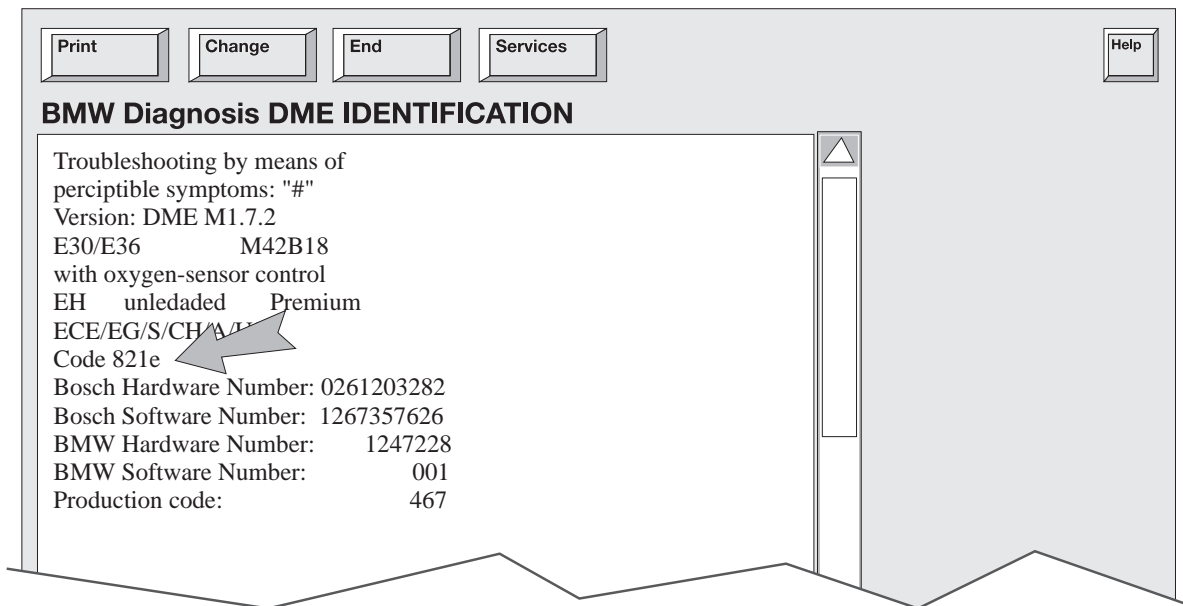
If variant coding of an M1.3 control module for an M20 engine is not possible, Reference **SI B12 06 89 (1878)** for more information. The cause may be that Pin 18 (DME Code Link) of the 20 pin diagnostic connector may be backed out of the connector preventing communication between the tester and DME control module.

Variant Code Identification Display

The variant code for a DME M1.X control module can be accessed in three ways:

- Electronically via DISplus or GT1:
 - DME Control Module Identification screen
 - Select “Programming” then “DME variant code”, installed variant code is displayed.
- DME control module variant code label
- **SI B13 02 90 (3009)**

The quickest and most accurate way to access the variant code of the installed DME is by viewing the DME Identification page using the DISplus or GT1.

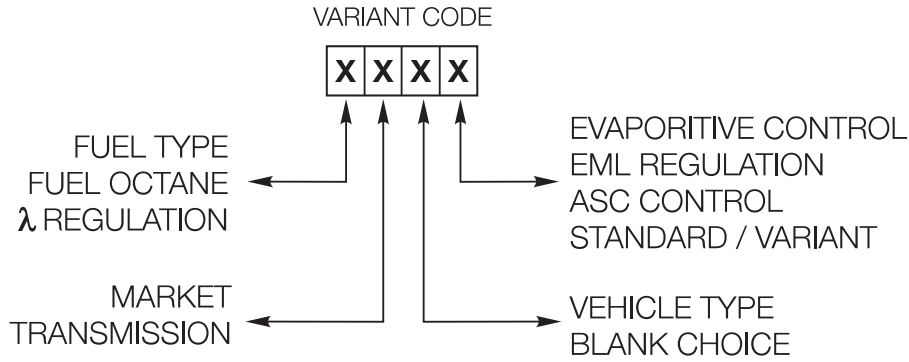


If a control module malfunction is suspected cross reference the BMW and Bosch part numbers in the display with the installed variant code. Problems can occur if:

- The correct variant code is installed in the wrong control module.
- An incorrect variant code is installed in the correct control module

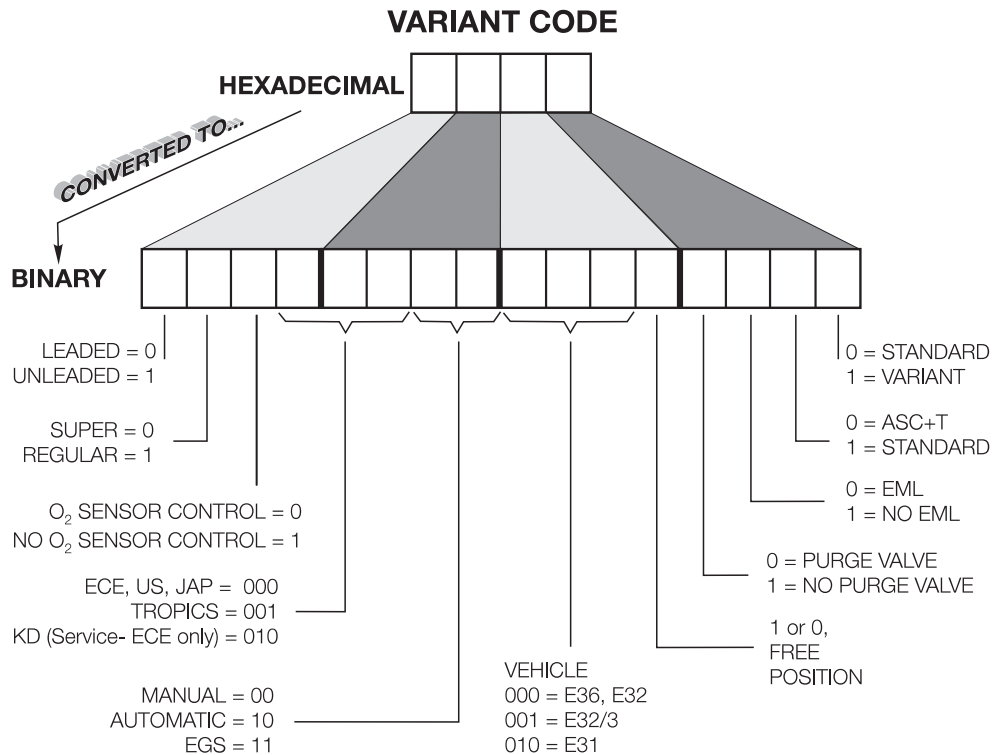
Variant Code Structure

The four digit structure of the variant code consists of a 16 bit binary code which converts to a 4 digit hexadecimal code. Each hex character provides information pertaining to specific functions, characteristic maps and vehicle data.



The information from the variant code is used to define the the operational data to be assigned to the operating program of the module.

Each hex digit has a binary equivalent that provides four 1s or 0s which results in a total of 16 bits of information (or choices) per hexadecimal digit.



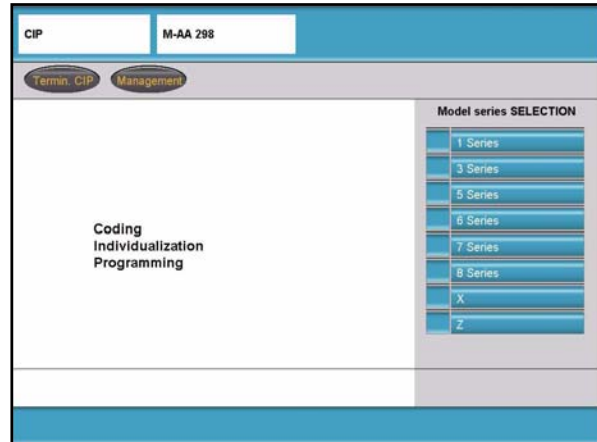
Under no circumstances should the variant code to be changed from the assigned number for the vehicle. Erratic engine operation and possible engine damage may result.

Variant Code Procedure

In the event that an M1.x control module needs to be replaced or recoded the process can be accessed through Progman with CIP 15.0 or higher.

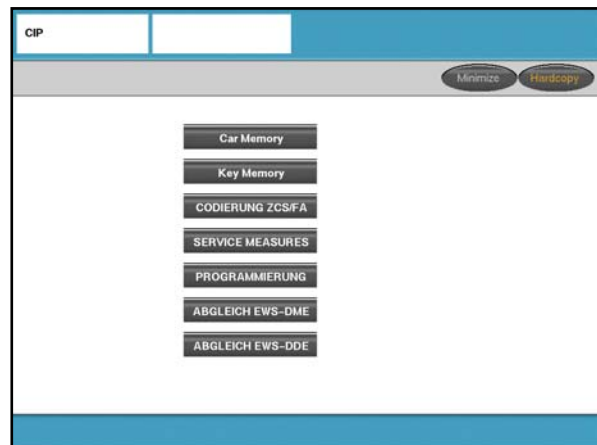
To perform the procedure from CIP the Model series must be selected.

Then select the body (E32, E36 ...)



Select: **"Programmierung"**

Advance screen to the right two times to enter the programming/variant coding selection screen.



From the "Selection" screen:

Select: **"DME Variant Code"**

Select: **"Exchange Control Unit"**

Select: The Engine version installed on the connected vehicle to be coded Ex. "M40/42/43"

The following steps are based on the selection of "M40/42/43":

"M40/42/43 4-Cyl. has been selected ? Y/N"

Select: **"Y"**

"Is the vehicle fitted with a DME M1.7.3 (M43 engine from 9/95) ? Y/N"

Select: **"N"**

Select: **1 "New Coding"**

Select: **1 "Adopt code from old control unit"** and follow the procedure indicated once selection is made.

OR

Select: **2 "Enter code manually"** (See table for Variant Code) and follow the procedure indicated once selection is made.

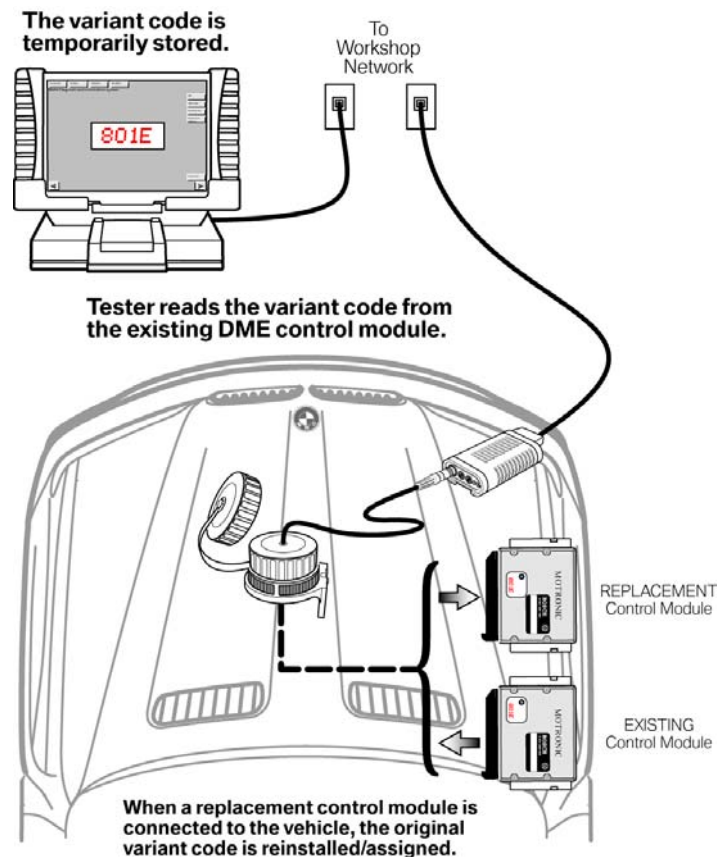
If DME M1.X control module replacement is required, determine which method of variant coding you will need.

- Adopt variant code from existing control module
- Manual input of variant code from control module label

Note: For vehicles produced with the M42B19 engine (M1.7.2 Engine Control Module) a replacement EPROM was made available for vehicles produced 1/94-12/95 to address a service issue, refer to SIB 12 09 95. Since the control module for this engine requires a variant code in order to assign the correct operating data to the program a variant code must still be assigned to the module upon installing the EPROM.

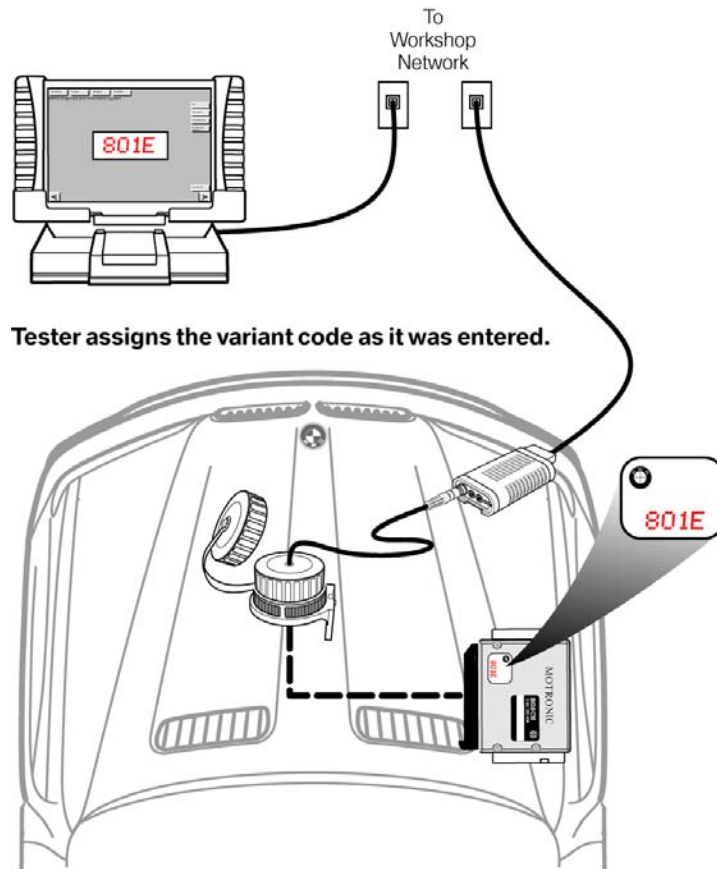
Adopt a Variant Code

The preferred method of coding a replacement module is by “Adopting” the code from the old module, since this method prevents accidentally entering the wrong code which may occur when trying to manually enter the code. If the control module cannot communicate on the diagnostic link the manual input method will be necessary (refer to Manually Entering Variant Code).



Manually Entering a Variant Code

The process of manually entering a variant code should only be utilized when it is not possible to communicate with the Engine Control Module (DME) via the DISplus or GT1. The variant code to be entered can be taken from the label of the problem control module and checked against the listing of variant codes provided in **SI B13 02 90 (3009)** prior to entering the code into the new module.



Review Questions

1. *What is the purpose of variant coding?*

2. *What type of control modules need to be variant coded?*

3. *What type of information does the variant code contain?*

4. *What happens when a variant code is assigned to a module?*
